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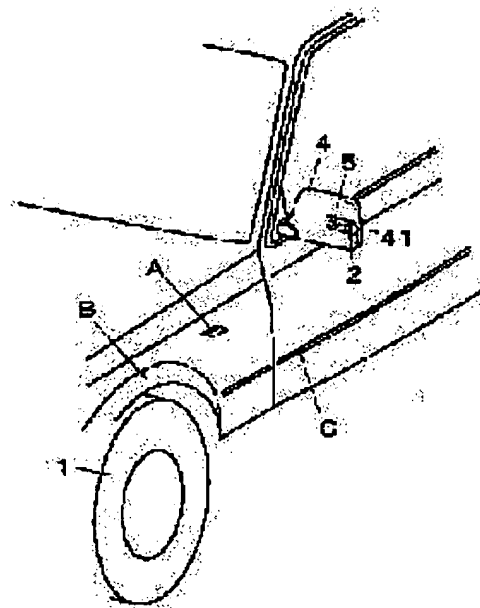
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(54) VEHICLE PERIPHERY IMAGING DEVICE

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a vehicle periphery imaging device capable of imaging a wheel part and the peripheral part without dazzling a surrounding pedestrian and a driver even in a dark place at night.

SOLUTION: This vehicle periphery imaging device has the wheel part 1 arranged in an outer shell of a vehicle and an imaging means 2 for imaging the peripheral part. The imaging means 2 has sensitivity of an infrared area.



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CLAIMS

[Claim(s)]

[Claim 1] It is circumference image pick-up equipment for vehicles which is circumference image pick-up equipment for vehicles which comes to have an image pick-up means to be formed in the coat of a vehicle and to picturize a wheel part and its circumference part, and is characterized by said image pick-up means coming to have the sensibility of an infrared region.

[Claim 2] It is circumference image pick-up equipment for vehicles which it is circumference image pick-up equipment for vehicles which comes to have an image pick-up means is formed in the coat of a vehicle and picturize a wheel part and its circumference part, and a lighting means are formed in the coat of said vehicle and illuminate said wheel part and its circumference part, and said image pick-up means has the sensibility of an infrared region, and is characterized by for said lighting means to consist of a source of infrared light.

[Claim 3] Said image pick-up means is circumference image pick-up equipment for vehicles according to claim 1 or 2 characterized by picturizing at least one wheel part for steering, and its circumference part.

[Claim 4] It is circumference image pick-up equipment for vehicles given in either of claim 1 to claims 3 characterized by coming to prepare said image pick-up means in the mirror holder for holding a rearview mirror.

[Claim 5] It is circumference image pick-up equipment for vehicles given in either of claim 2 to claims 4 characterized by coming to prepare said lighting means in the mirror holder for holding a rearview mirror.

[Claim 6] Circumference image pick-up equipment for vehicles given in either of claim 2 to claims 5 characterized by having the means for switching which switches burning/putting out lights by said lighting means.

[Claim 7] Circumference image pick-up equipment for vehicles given in either of claim 1 to claims 6 characterized by picturizing through an infrared transparency filter for said image pick-up means.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] this invention is related to and is related.

[0002]

[Description of the Prior Art] As one of the equipment for checking the circumference of the conventional vehicle, it is attached in the front door of the lateral portion of current and the body of a car, and the so-called door mirror incorporating the mirror for checking back traffic information has spread most. However, directly under [of the door mirror seen from the driver] and a front wheel especially the left front wheel seen from the driver of a right driver's seat or the right front wheel especially seen from the driver of a left driver's seat, and its circumference part become a dead angle.

[0003] Although there were some which attached the small mirror in the front fender part of a vehicle, and measured the improvement of a dead angle as what supervises such a dead angle Since it was not able to supervise from the circumference part to a front-wheel part and its direction of the front, For example, the camera which has CCD (charge-coupled device) behind a door mirror was formed like JP,61-146450,U, and the thing it enabled it to supervise with the screen which carried the wheel part which said camera picturizes, and its circumference part in in the car was proposed.

[0004]

[Problem(s) to be Solved by the Invention] However, the image pick-up with the above cameras was that to which the so-called blooming phenomenon in which an image bleeds occurs, has a possibility that the screen which can check a wheel part and the condition of the circumference part in the pictures cannot be picturized, and image pick-up conditions will be limited by receiving a strong light like the headlight of direct sunlight or the vehicle which counters.

[0005] Moreover, if the illumination light with a comparatively large illuminance is required for the image pick-up with the above cameras and was in dark locations, such as night, it was not able to picturize the screen which can check a wheel part and the condition of the circumference part in the pictures. Then, as shown in JP,10-44863,A, what prepares the light for lighting for a camera and an image pick-up in the tooth back of a door mirror is proposed. Thus, when illuminating in a light, it was that to which the structure which prevents the optical leak from component parts, such as a door mirror, is needed in order not to reduce the structure and salability which do not illuminate except an image pick-up object so that a surrounding pedestrian or a surrounding operator may not be made to dazzle, and the structure as equipment becomes complicated.

[0006] Then, this invention aims at offering the circumference image pick-up equipment for vehicles which can picturize a wheel part and its circumference part, without complicating structure, even if it is the location where night etc. is especially dark.

[0007]

[Means for Solving the Problem] The circumference image pick-up equipment for vehicles by this invention is circumference image pick-up equipment for vehicles which comes to have an image pick-up means to be formed in the coat of a vehicle and to picturize a wheel part and its circumference part as indicated to claim 1, and it is characterized by said image pick-up means coming to have the sensibility of an infrared region.

[0008] Moreover, as indicated to claim 2, the circumference image pick-up equipment for vehicles by this invention An image pick-up means to be formed in the coat of a vehicle and to picturize a wheel part and its circumference part, It is circumference image pick-up equipment for vehicles which comes to have a lighting means to be formed in the coat of said vehicle and to illuminate said wheel part and its circumference part, and said image pick-up means has the sensibility of an infrared region, and it is characterized by said lighting means consisting of a source of infrared light.

[0009] Moreover, as indicated to claim 3, in the circumference image pick-up equipment for vehicles according to claim

1 or 2, said image pick-up means is characterized by picturizing at least one wheel part for steering, and its circumference part.

[0010] Moreover, as indicated to claim 4, in the circumference image pick-up equipment for vehicles given in either of claim 1 to claims 3, it is characterized by coming to prepare said image pick-up means in the mirror holder for holding a rearview mirror.

[0011] Moreover, as indicated to claim 5, in the circumference image pick-up equipment for vehicles given in either of claim 2 to claims 4, it is characterized by coming to prepare said lighting means in the mirror holder for holding a rearview mirror.

[0012] Moreover, as indicated to claim 6, it is characterized by having the means for switching which switches burning/putting out lights by said lighting means in the circumference image pick-up equipment for vehicles given in either of claim 2 to claims 5.

[0013] Moreover, as indicated to claim 7, in the circumference image pick-up equipment for vehicles given in either of claim 1 to claims 6, it is characterized by picturizing through an infrared transparency filter for said image pick-up means.

[0014]

[Embodiment of the Invention] Hereafter, the gestalt of operation of this invention is explained based on an accompanying drawing.

[0015] Drawing 1 is the mounting external view of the circumference image pick-up equipment for vehicles in the gestalt of operation of this invention, and drawing 2 is drawing showing that important section, and picturizes the front left wheel part 1 and its circumference part in this case.

[0016] the tooth back of the rearview mirror (a dotted line shows drawing 2) 3 with which the image pick-up means 2 is formed in the coat of a vehicle -- and as built-in installation is carried out at the mirror holder 4 holding a rearview mirror 3 and it faces from the window part 41 of the translucency prepared in the mirror holder 4, the front left wheel part 1 and its circumference part of the vehicle used as an image pick-up object can be picturized -- as -- before ** -- a lower part is turned a little and it is fixed.

[0017] As the lighting means 5 is established near the image pick-up means 2, and built-in arrangement is carried out at the mirror holder 4 which holds a rearview mirror 3 like the image pick-up means 2 in this case and it is faced from the window part 41 of the translucency prepared in the mirror holder 4, it illuminates front left wheel 1 part and its circumference part of the vehicle used as an image pick-up object.

[0018] A wheel circumference part including the condition of a wheel can be picturized without spoiling the appearance of a vehicle, since the front left wheel part 1 of the vehicle which serves as an image pick-up object from the inside of the mirror holder 4 holding the rearview mirror 3 prepared in the outermost part of a vehicle, and its periphery can be illuminated and picturized according to the configuration mentioned above.

[0019] Drawing 3 is drawing showing the electric configuration in the gestalt of operation of this invention.

[0020] What outputs infrared luminescence wavelength is used, in this case, two or more infrared rays LED whose peak emission wavelength is 880nm are formed, and the lighting means 5 is constituted.

[0021] The image pick-up means 2 consists of things equipped with components for image photography, such as CCD which has the sensibility of the infrared wavelength field where the lighting means 4 emits light, changes an image pick-up object as image pick-up information (data), and outputs it to the control means mentioned later.

[0022] The display means 6 is used also [liquid crystal display / which is used as an output display of a navigation system], and it carries out image display so that the wheel part which serves as a dead angle for an operator based on the image pick-up information from the image pick-up means 2, and the situation of the circumference part can be checked by looking.

[0023] A means for switching 7 consists of the switches and control panels which are prepared in about six display means, and outputs burning/putting out lights by the lighting means 5 to the control means later mentioned as a change-over signal. By establishing this means for switching 7, the wheel part 1 and its circumference part are illuminated by sufficient illumination light, such as sunlight, and since the lighting means 5 can be switched off when the lighting by the lighting means 5 is unnecessary, it becomes circumference image pick-up equipment for vehicles which stopped the power consumption of the lighting means 5.

[0024] A control means 8 urges the image display based on the image pick-up information from the image pick-up means 2 to the display means 6. Moreover, a control means 8 controls the lighting of the lighting means 5 based on the change-over signal from a means for switching 7. In addition, although it was made to switch when an operator operated a means for switching 7 manually in this case, based on the signal of the illumination signal outputted from a vehicle side, the feeling sensor of light, etc., burning/putting out lights of lighting can also be switched.

[0025] In addition, it connects with the NABIYU knitting which has a map database and which is not illustrated, and a control means 8 can control the display means 6 to display the map information in which reading appearance is carried out by navigation. In this case, although map information on navigation and the image pick-up information from the image pick-up means 2 are indicated by selection, both the map information on navigation and the image pick-up information from the image pick-up means 2 may be displayed with a split screen.

[0026] According to the configuration mentioned above, it is circumference image pick-up equipment for vehicles which comes to have an image pick-up means 2 to be established in the mirror holder 4 holding the rearview mirror 3 of a vehicle, and to picturize the wheel part 1 and its circumference part. By coming to have the sensibility of an infrared region, the image pick-up means 2 For example, since a blooming phenomenon can be controlled even if it is the case where a strong light (light) is received like the headlight of the vehicle which counters, The wheel part which cannot be easily influenced by image pick-up conditions, and its circumference part can be picturized.

[0027] Moreover, an image pick-up means 2 to be established in the mirror holder 4 holding the rearview mirror 3 of a vehicle, and to picturize the wheel part 1 and its circumference part, When it is circumference image pick-up equipment for vehicles which comes to have a lighting means 5 to be formed in the coat of said vehicle and to illuminate the wheel part 1 and its circumference part, the image pick-up means 2 has the sensibility of an infrared region and the lighting means 5 consists of a source of infrared light Since the source 5 of infrared light can perform lighting sufficient on luminescence wavelength other than human being's light even if it is the location where night etc. is especially dark, It becomes the structure which turned into the structure where a surrounding pedestrian or a surrounding operator were not made to dazzle, and prevented the optical leak (light leak) from component parts, such as a rearview mirror and a mirror holder, without complicating structure as equipment.

[0028] Moreover, by picturizing the front left wheel part 1 which is at least one wheel part for steering, and its circumference part, the image pick-up means 2 can be operated, after the time of ***** of a vehicle etc. checks the steering angle of the wheel by steering actuation by looking.

[0029] In addition, although the lighting means 5 in the gestalt of operation of this invention was established in the mirror holder 4 which holds a rearview mirror 3 like the image pick-up means 2, this invention is not limited to this and just illuminates wheel parts which are prepared near the image pick-up means and serve as an object for an image pick-up, such as the winker part A, the fender part B, and the side mall part C of a door, and the circumference part of those.

[0030] Moreover, although the image pick-up means 2 of the gestalt of operation of this invention showed what is fixed to it from the window part 41 of the translucency which built-in installation was carried out and was prepared in the mirror holder 4 as faces the mirror holder 4 holding a rearview mirror 3 By equipping a window part 41 with an infrared transparency filter, and picturizing through said infrared transparency filter, although what was cut and lacked is sufficient as the window part 41 of translucency and you may have semi-permeable covering Since the quantity of light which receives light can be stopped, it becomes the structure where a blooming phenomenon cannot happen more easily.

[0031] Moreover, the control means 8 is possible also for switching whether image display by the display means 6 is performed based on the signal of the rate sensor of a vehicle, the sensor which detects the steering include angle of a steering or a wheel, a hazard, a winker, etc., and can mitigate the manual operation by the operator in this case.

[0032] Moreover, a control means 8 is made to perform image display by the display means 6 automatically at the time of ON of the accessory (ACC) switch of a vehicle, and can turn off the image display by the display means 6 after predetermined time.

[0033] Moreover, the switch of the dedication for performing image display by the display means 6 can be formed near the steering of a vehicle, and a control means 8 can twist and carry out image display to the display means 6 by the existence of an input of the switch of said dedication.

[0034]

[Effect of the Invention] This invention is circumference image pick-up equipment for vehicles which comes to have an image pick-up means to be formed in the coat of a vehicle and to picturize a wheel part and its circumference part, and said image pick-up means can offer the circumference image pick-up equipment for vehicles which can picturize a wheel part and its circumference part, without making a surrounding pedestrian and a surrounding operator dazzle, even if it is dark locations, such as night, by coming to have the sensibility of an infrared region.

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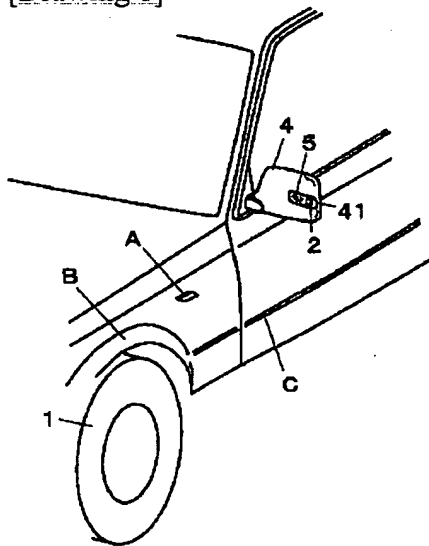
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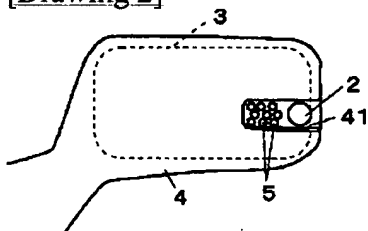
DRAWINGS

[Drawing 1]



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[Drawing 2]



[Drawing 3]



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